SEQUENCE LISTING

<110> ASAHARA, Takayuki
HIRANO, Seiko
YASUEDA, Hisashi

<120> Method for Producing L-Lysine Using Methanol-utilizing Bacterium

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<150> JP 2003-20513
<151> 2003-01-29

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<170> PatentIn Ver. 2.0

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<222> (1236)..(2363)

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1 5
gtt ggt atc gtt aaa gcg cag gtt gcg cac ttc acc cag ccg ctg acc 1301
Val Gly Ile Val Lys Ala Gln Val Ala His Phe Thr Gln Pro Leu Thr
10 15 20
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Leu Lys Ser Gly Ala Val Leu Pro Gln Tyr His Leu Ala Tyr Glu Thr
25 30 35
tat ggt gaa ctc aac gcg gcc aaa acc aat gcg gta ttg att tgt cac 1397
Tyr Gly Glu Leu Asn Ala Ala Lys Thr Asn Ala Val Leu Ile Cys His
40 45 50

gcc ttg tcc ggc aat cat cat gtc gct ggt cgc tat tcg ccg gaa gat 1445
Ala Leu Ser Gly Asn His His Val Ala Gly Arg Tyr Ser Pro Glu Asp
55 60 65 70
aaa tat cct ggc tgg tgg gat aac ctt gtt ggc ccc ggt aag cca ctg 1493
Lys Tyr Pro Gly Trp Trp Asp Asn Leu Val Gly Pro Gly Lys Pro Leu
75 80 85
gat acc aac aag ttt ttt gtg att ggc ctc aac aat ctg ggc ggc tgt 1541
Asp Thr Asn Lys Phe Phe Val Ile Gly Leu Asn Asn Leu Gly Gly Cys
90 95 100
cac ggt agt agc ggc cct tcc agc gta aat cca ctc act gac cgg cct 1589
His Gly Ser Ser Gly Pro Ser Ser Val Asn Pro Leu Thr Asp Arg Pro
105 110 115
tac agt gca acg ttc cca gtc gtg acg gta gaa gac tgg gtg gaa tct 1637
Tyr Ser Ala Thr Phe Pro Val Val Thr Val Glu Asp Trp Val Glu Ser
120 125 130
cag gcg cgc ctg ttg gat tat ctt gga att gac caa ctg gca gcc gtg 1685
Gln Ala Arg Leu Leu Asp Tyr Leu Gly Ile Asp Gln Leu Ala Ala Val
135 140 145 150
att ggt ggc agc ctg gga ggc atg caa gcg ctg cac tgg aat att gtc 1733
Ile Gly Gly Ser Leu Gly Gly Met Gln Ala Leu His Trp Asn Ile Val
155 160 165
tac ccc gag cgt gta cgg cat gcc ttt gtc att gcc tct gcg ccc aac 1781
Tyr Pro Glu Arg Val Arg His Ala Phe Val Ile Ala Ser Ala Pro Asn
170 175 180
ctg acc gca cag aac atg gcc ttt aac gaa gtg gca cgc cag gcg att 1829
Leu Thr Ala Gln Asn Met Ala Phe Asn Glu Val Ala Arg Gln Ala Ile
185 190 195
att acc gac ccc gag ttt ttt gac ggc gat tat tat aat cat ggc acc 1877
Ile Thr Asp Pro Glu Phe Phe Asp Gly Asp Tyr Tyr Asn His Gly Thr
200 205 210
gtc ccc cgc cgc ggc ttg cgt att gcc cgt atg ctg ggg cat atc acc 1925
Val Pro Arg Arg Gly Leu Arg Ile Ala Arg Met Leu Gly His Ile Thr
215 220 225 230
tac ttg tca gat gac gcc atg ggt gaa aaa ttt ggc cgc aaa ttg cgc 1973
Tyr Leu Ser Asp Asp Ala Met Gly Glu Lys Phe Gly Arg Lys Leu Arg
235 240 245

cat ggc gat gtg aag tac agc ttt gat gtc gaa ttt gaa atg gaa tct 2021
His Gly Asp Val Lys Tyr Ser Phe Asp Val Glu Phe Glu Met Glu Ser
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tac ttg cgc tat cag ggc gac aag ttt gcc ggg gaa ttt gat gcc aac 2069
Tyr Leu Arg Tyr Gln Gly Asp Lys Phe Ala Gly Glu Phe Asp Ala Asn
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acc tat ttg cgc atg aca cgc gca ctg gac tat ttt gac ccg gcc ctc 2117
Thr Tyr Leu Arg Met Thr Arg Ala Leu Asp Tyr Phe Asp Pro Ala Leu
280 285 290

gat tat gac ggc aat tta agc aag gcg ctc agc cgt gcc aag gcc aag 2165
Asp Tyr Asp Gly Asn Leu Ser Lys Ala Leu Ser Arg Ala Lys Ala Lys
295 300 305 310

ttt gtc gtc atc tcg ttt acc act gac tgg cgc ttt tcg cct gcc cgc 2213
Phe Val Val Ile Ser Phe Thr Thr Asp Trp Arg Phe Ser Pro Ala Arg
315 320 325

tca cgc gaa att gtc cag gcc ttg ctg gat aac gcc ttg ccc gtc aaa 2261
Ser Arg Glu Ile Val Gln Ala Leu Leu Asp Asn Ala Leu Pro Val Lys
330 335 340

tat gcc gag gta act tct gcc cat ggc cat gac gct ttc ttg atg ccg 2309
Tyr Ala Glu Val Thr Ser Ala His Gly His Asp Ala Phe Leu Met Pro
345 350 355

gat gcg cat tac cac gcc atc atg cgc gcc tac ctg gag caa atc aaa 2357
Asp Ala His Tyr His Ala Ile Met Arg Ala Tyr Leu Glu Gln Ile Lys
360 365 370

gta tga cgaatgcaaa tattaccaat attcgcccag actttgcatt aattacaaac 2413
Val
375

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35 40 45

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Arg Tyr Ser Pro Glu Asp Lys Tyr Pro Gly Trp Trp Asp Asn Leu Val
65                  70                  75                  80
Gly Pro Gly Lys Pro Leu Asp Thr Asn Lys Phe Phe Val Ile Gly Leu
                85                  90                  95
Asn Asn Leu Gly Gly Cys His Gly Ser Ser Gly Pro Ser Ser Val Asn
            100                 105                 110
Pro Leu Thr Asp Arg Pro Tyr Ser Ala Thr Phe Pro Val Val Thr Val
        115                 120                 125
Glu Asp Trp Val Glu Ser Gln Ala Arg Leu Leu Asp Tyr Leu Gly Ile
    130                 135                 140
Asp Gln Leu Ala Ala Val Ile Gly Gly Ser Leu Gly Gly Met Gln Ala
145                 150                 155                 160
Leu His Trp Asn Ile Val Tyr Pro Glu Arg Val Arg His Ala Phe Val
                165                 170                 175
Ile Ala Ser Ala Pro Asn Leu Thr Ala Gln Asn Met Ala Phe Asn Glu
            180                 185                 190
Val Ala Arg Gln Ala Ile Ile Thr Asp Pro Glu Phe Phe Asp Gly Asp
        195                 200                 205
Tyr Tyr Asn His Gly Thr Val Pro Arg Arg Gly Leu Arg Ile Ala Arg
    210                 215                 220
Met Leu Gly His Ile Thr Tyr Leu Ser Asp Asp Ala Met Gly Glu Lys
225                 230                 235                 240
Phe Gly Arg Lys Leu Arg His Gly Asp Val Lys Tyr Ser Phe Asp Val
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Glu Phe Glu Met Glu Ser Tyr Leu Arg Tyr Gln Gly Asp Lys Phe Ala
            260                 265                 270
Gly Glu Phe Asp Ala Asn Thr Tyr Leu Arg Met Thr Arg Ala Leu Asp
        275                 280                 285
Tyr Phe Asp Pro Ala Leu Asp Tyr Asp Gly Asn Leu Ser Lys Ala Leu
    290                 295                 300
Ser Arg Ala Lys Ala Lys Phe Val Val Ile Ser Phe Thr Thr Asp Trp
305                 310                 315                 320
Arg Phe Ser Pro Ala Arg Ser Arg Glu Ile Val Gln Ala Leu Leu Asp
                325                 330                 335
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Asn Ala Leu Pro Val Lys Tyr Ala Glu Val Thr Ser Ala His Gly His
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Asp Ala Phe Leu Met Pro Asp Ala His Tyr His Ala Ile Met Arg Ala
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Tyr Leu Glu Gln Ile Lys Val
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<212> DNA
<213> Brevibacterium lactofermentum

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<222> (1)..(711)

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ctt tta ctg tcc atc gga ccg cag aat gta ctg gtg att aaa caa gga 96
Leu Leu Leu Ser Ile Gly Pro Gln Asn Val Leu Val Ile Lys Gln Gly
20 25 30
att aag cgc gaa gga ctc att gcg gtt ctt ctc gtg tgt tta att tct 144
Ile Lys Arg Glu Gly Leu Ile Ala Val Leu Leu Val Cys Leu Ile Ser
35 40 45
gac gtc ttt ttg ttc atc gcc ggc acc ttg ggc gtt gat ctt ttg tcc 192
Asp Val Phe Leu Phe Ile Ala Gly Thr Leu Gly Val Asp Leu Leu Ser
50 55 60
aat gcc gcg ccg atc gtg ctc gat att atg cgc tgg ggt ggc atc gct 240
Asn Ala Ala Pro Ile Val Leu Asp Ile Met Arg Trp Gly Gly Ile Ala
65 70 75 80
tac ctg tta tgg ttt gcc gtc atg gca gcg aaa gac gcc atg aca aac 288
Tyr Leu Leu Trp Phe Ala Val Met Ala Ala Lys Asp Ala Met Thr Asn
85 90 95
aag gtg gaa gcg cca cag atc att gaa gaa aca gaa cca acc gtg ccc 336

Lys Val Glu Ala Pro Gln Ile Ile Glu Glu Thr Glu Pro Thr Val Pro
100 105 110

gat gac acg cct ttg ggc ggt tcg gcg gtg gcc act gac acg cgc aac 384
Asp Asp Thr Pro Leu Gly Gly Ser Ala Val Ala Thr Asp Thr Arg Asn
115 120 125

cgg gtg cgg gtg gag gtg agc gtc gat aag cag cgg gtt tgg gta aag 432
Arg Val Arg Val Glu Val Ser Val Asp Lys Gln Arg Val Trp Val Lys
130 135 140

ccc atg ttg atg gca atc gtg ctg acc tgg ttg aac ccg aat gcg tat 480
Pro Met Leu Met Ala Ile Val Leu Thr Trp Leu Asn Pro Asn Ala Tyr
145 150 155 160

ttg gac gcg ttt gtg ttt atc ggc ggc gtc ggc gcg caa tac ggc gac 528
Leu Asp Ala Phe Val Phe Ile Gly Gly Val Gly Ala Gln Tyr Gly Asp
165 170 175

acc gga cgg tgg att ttc gcc gct ggc gcg ttc gcg gca agc ctg atc 576
Thr Gly Arg Trp Ile Phe Ala Ala Gly Ala Phe Ala Ala Ser Leu Ile
180 185 190

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Trp Phe Pro Leu Val Gly Phe Gly Ala Ala Ala Leu Ser Arg Pro Leu
195 200 205

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Ser Ser Pro Lys Val Trp Arg Trp Ile Asn Val Val Val Ala Val Val
210 215 220

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<210> 18
<211> 236
<212> PRT
<213> Brevibacterium lactofermentum

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    50                  55                  60
Asn Ala Ala Pro Ile Val Leu Asp Ile Met Arg Trp Gly Gly Ile Ala
65                  70                  75                  80
Tyr Leu Leu Trp Phe Ala Val Met Ala Ala Lys Asp Ala Met Thr Asn
                85                  90                  95
Lys Val Glu Ala Pro Gln Ile Ile Glu Glu Thr Glu Pro Thr Val Pro
          100                 105                 110
Asp Asp Thr Pro Leu Gly Gly Ser Ala Val Ala Thr Asp Thr Arg Asn
       115                 120                 125
Arg Val Arg Val Glu Val Ser Val Asp Lys Gln Arg Val Trp Val Lys
   130                 135                 140
Pro Met Leu Met Ala Ile Val Leu Thr Trp Leu Asn Pro Asn Ala Tyr
145                 150                 155                 160
Leu Asp Ala Phe Val Phe Ile Gly Gly Val Gly Ala Gln Tyr Gly Asp
              165                 170                 175
Thr Gly Arg Trp Ile Phe Ala Ala Gly Ala Phe Ala Ala Ser Leu Ile
          180                 185                 190
Trp Phe Pro Leu Val Gly Phe Gly Ala Ala Ala Leu Ser Arg Pro Leu
       195                 200                 205
Ser Ser Pro Lys Val Trp Arg Trp Ile Asn Val Val Val Ala Val Val
   210                 215                 220
Met Thr Ala Leu Ala Ile Lys Leu Met Leu Met Gly
225                 230                 235
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